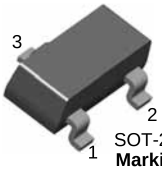
August 2005

FAIRCHILD SEMICONDUCTOR®

MMBT5550
NPN General Purpose Amplifier

- This device is designed for general purpose high voltage amplifiers and gas discharge display drivers.



SOT-23
Marking: 1F

1. Base 2. Emitter 3. Collector

Absolute Maximum Ratings * T_a = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	140	V
V_{CBO}	Collector-Base Voltage	160	V
V_{EBO}	Emitter-Base Voltage	6.0	V
I_C	Collector current - Continuous	600	mA
T_J, T_{stg}	Junction and Storage Temperature	-55 ~ +150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

1. These ratings are based on a maximum junction temperature of 150 degrees C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Electrical Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage *	I_C = 1.0mA, I_B = 0	140		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100μA, I_E = 0	160		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10mA, I_C = 0	6.0		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 100V, I_E = 0 V_{CB} = 100V, I_E = 0, T_a = 100°C		100 100	nA μA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 4.0V, I_C = 0		50	nA
On Characteristics					
h_{FE}	DC Current Gain	I_C = 1.0mA, V_{CE} = 5.0V I_C = 10mA, V_{CE} = 5.0V I_C = 50mA, V_{CE} = 5.0V	60 60 20	250	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 10mA, I_B = 1.0mA I_C = 50mA, I_B = 5.0mA		0.15 0.25	V V
$V_{BE(sat)}$	Base-Emitter On Voltage	I_C = 10mA, I_B = 1.0mA I_C = 50mA, I_B = 5.0mA		1.0 1.2	V V

Electrical Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Small Signal Characteristics					
f_T	Current Gain Bandwidth Product	I_C = 10mA, V_{CE} = 10V, f = 100MHz	50		MHz
C_{obo}	Output Capacitance	V_{CB} = 10V, I_E = 0, f = 1.0MHz		6.0	pF
C_{ibo}	Input Capacitance	V_{BE} = 0.5V, I_C = 0, f = 1.0MHz		30	pF

Thermal Characteristics T_a=25°C unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

* Device mounted on FR-4 PCB 1.6" × 1.6" × 0.06."

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
1F	MMBT5550	SOT-23	7”	--	3,000

Typical Performance Characteristics

Figure 1. Typical Pulsed Current Gain vs Collector Current

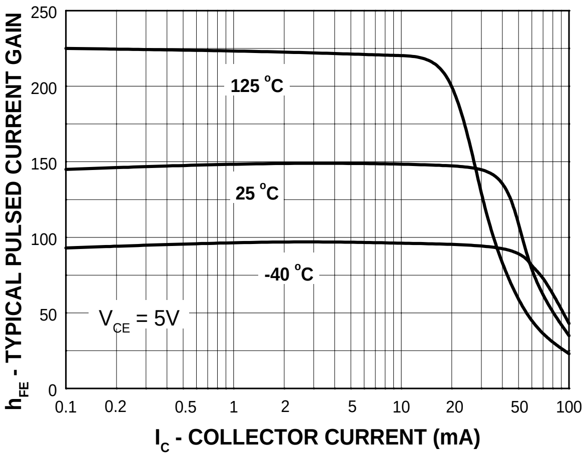


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

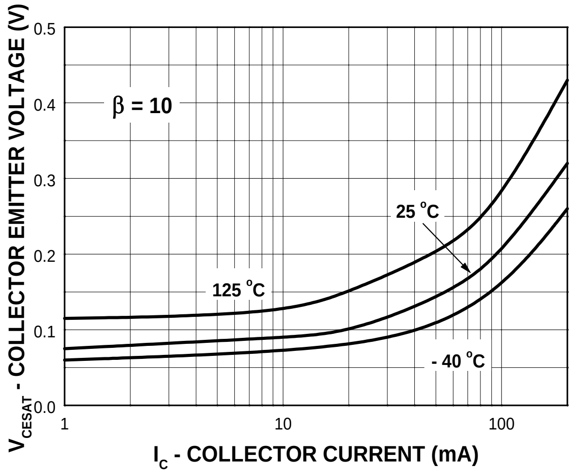


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

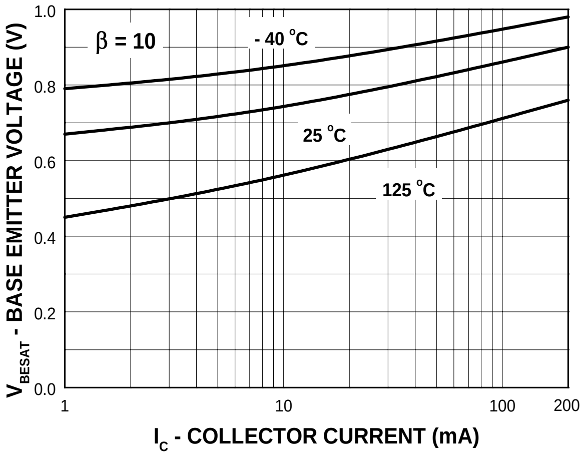


Figure 4. Base-Emitter On Voltage vs Collector Current

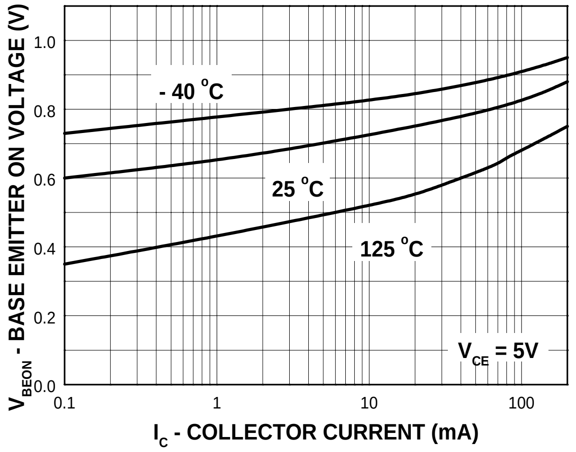


Figure 5. Collector Cutoff Current vs Ambient Temperature

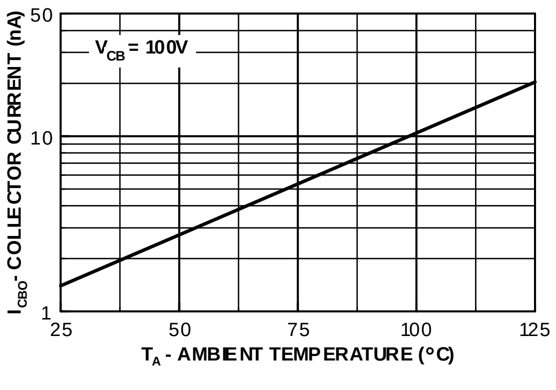
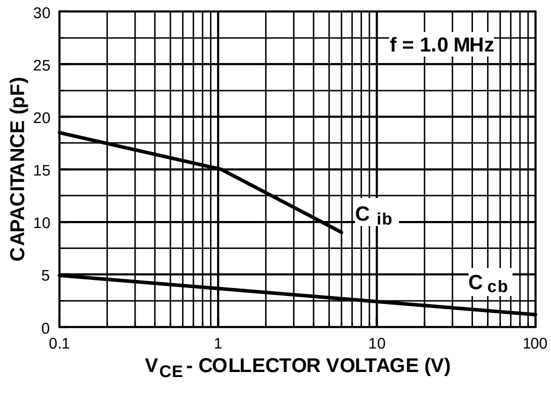
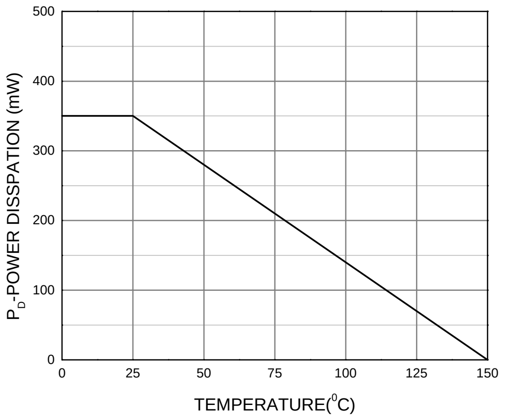


Figure 6. Input and Output Capacitance vs Reverse Voltaget



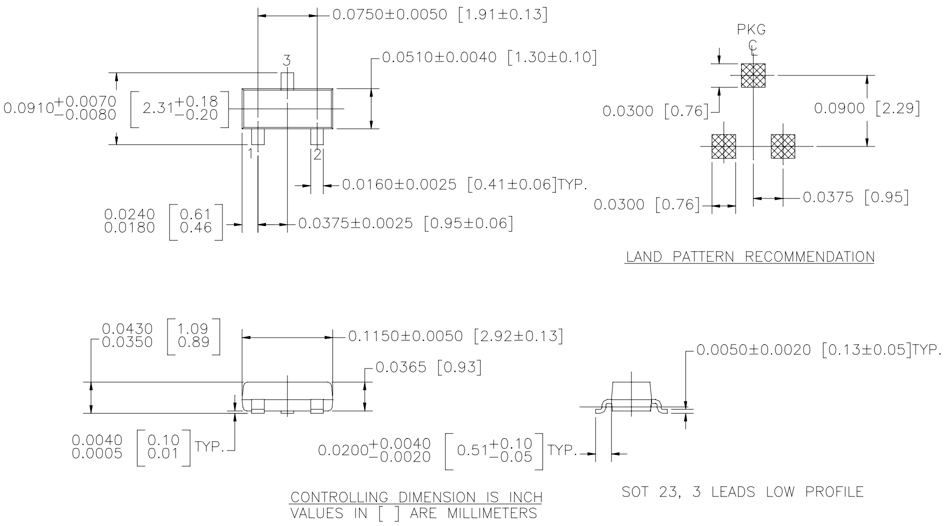
Typical Performance Characteristics (Continued)

Figure 7. Power Dissipation vs Ambient Temperature



Mechanical Dimensions

SOT-23



NOTE : UNLESS OTHERWISE SPECIFIED

1. STANDARD LEAD FINISH 150 MICROINCHES / 3.81 MICROMETERS MINIMUM TIN / LEAD (SOLDER) ON ALLOY 42
2. REFERENCE JEDEC REGISTRATION TO−236, VARIATION AB, ISSUE G, DATED JUL 1993

Dimensions in Millimeters

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POP™
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PowerSaver™
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QFET®
QS™
QT Optoelectronics™
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SPM™
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SuperSOT™-3
SuperSOT™-6
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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

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